

Application for

**WaterSMART Grant
Small-Scale Water Efficiency Project**

(Funding Opportunity Announcement No. BOR-DO-17-F011)

to implement

CARBON CANAL FLOW CONTROL AUTOMATION

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May 8, 2017

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ATTACHMENTS

1. Map showing the geographic location of the Carbon Canal.
2. Letter of commitment from the Utah Department of Agriculture and Food.
3. Application for Federal Assistance (SF424).
4. Budget Information - Construction Programs (SF424C).
5. Assurances - Construction Programs (SF424D).

Executive Summary

May 8, 2017

Carbon Canal Company
Price, Carbon County, Utah

The Carbon Canal consists of 27 miles of earth-lined open channel that conveys water to 460 water users. The system has inherent inefficiencies that are attributed to the length of the canal and inadequate flow control systems. This project proposes to implement canal automation on the Carbon Canal in order to conserve water and increase the base flow rate in the Price River. The Price River is within the historic range of the endangered Colorado Pikeminnow, but the excessive diversion of water into irrigation canals frequently leaves the river with little or no flow during certain times of the year. Improved distribution efficiency through automation will allow excess water to remain in the river. The project will also provide better downstream flow control in the Carbon Canal that will protect residential and commercial properties for which the canal provides storm water conveyance.

The project is not located on a federal facility, but rather entirely on private land. It is anticipated that the project will be implemented between September 18, 2017, and May 1, 2018.

Background Data

The Carbon Canal Company has been delivering irrigation water in the Carbon Canal for more than 100 years. The source of water is direct flow in the Price River and storage in Scofield Reservoir. A map showing the geographic location of the Carbon Canal is attached.

Direct flow water rights on the Price River were established by decree and assigned a priority by date and class. The direct flow rights owned by the Carbon Canal Company are shown in the following table.

No.	Priority Date	Class	Quantity (cfs)
91-366	1874	1 st	7.980
91-764	1874	1 st	0.850
91-765	1876	2 nd	0.333
91-3396	1876	9 th	48.00
91-3397	1907	10 th	259.0

Direct flow water rights are owned by the Carbon Canal Company and the water is distributed to individuals according to the number of shares owned in the company. Shares of water stored in Scofield reservoir are owned by individuals, but delivered through the Carbon Canal.

The average annual quantity of water delivered is 12,668 acre-feet of direct flow in the Price River and 10,875 acre-feet from Scofield Reservoir, for a total of 23,543. There are 460 total water users, and more than 11,000 acres irrigated land. The main crops are alfalfa, pasture grass, and grain.

The Carbon Canal is the main delivery system and is 27 miles in length. It is an earth-lined open channel. There are 11 lateral lines that branch off of the main canal, and 10 of these are fully piped. There are 116 irrigation turnouts that deliver water direct to irrigated land.

Because of the length of the canal and the difficulty in adjusting flow rates, the canal frequently conveys more water than is necessary to meet the irrigation demand. The current project proposes to provide automated controls and remote operation capability in order to improve the efficiency of water conveyance and conserve water within the Price River watershed.

Project Description

SUMMARY

The purpose of this project is twofold: 1) improve the efficiency of water delivery in the canal system, and 2) provide better protection against flooding of residential and commercial areas. The purpose will be achieved by upgrading four flow control sites with water level sensors, motors, SCADA systems, and remote operation capability.

CURRENT ISSUES

The flow control gates at the head of the Carbon Canal, and at three sites along the length of the canal, are all manually operated. Because the water master spends the majority of his time performing maintenance and water delivery procedures, the incoming flow rate is typically set for the maximum potential demand and adjusted infrequently. This results in excess water being conveyed the full length of the canal.

The entire flow rate of the Price River is regularly diverted into the canal and therefore the river is completely dry in the reach downstream of the diversion structure. A dry river reach and erratic flow rates harm riparian habitat and create adverse conditions for native fish species, including the endangered Colorado pikeminnow.

In recent years residential and commercial development has increased in many locations directly below the grade of the canal, and the canal has inadvertently become the means of controlling the flow of storm water into these areas. Previously if excess storm water spilled from the canal it would flow harmlessly through an agricultural field. Because this water now has the potential to flood homes or businesses, there is an increased need to release excess water from the canal at strategic locations.

SOLUTION

The proposed project will provide full automation and remote operation capability at each of the four flow control sites. Thus, the incoming flow rate can be adjusted frequently based on actual downstream demand, allowing excess water to remain in the river. In addition, excess storm water and tail water can be quickly released to prevent the canal from overtopping in residential or commercial areas.

Evaluation Criteria

EVALUATION CRITERION A – PLANNING EFFORTS SUPPORTING THE PROJECT

- *Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?*

In July 2015 the Carbon Canal Company completed and officially adopted their “Water Conveyance Facility Management Plan.” The plan identifies canal improvement projects that will increase delivery efficiency, conserve water, and improve safety. Specifically, automation of existing water control structures and measuring devices have been listed as an important element to improve the efficiency of the canal system.

- *Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.*

The purpose of the canal is to deliver water to agricultural land, but in performing that function it is imperative that the canal system not create hazardous situations for the general population. Thus, in the “Water Conveyance Facility Management Plan” the safety of residents and

infrastructure adjacent to the canal system is identified as the highest priority. The structures and automated controls necessary to release excess storm water from the canal is at the top of the list of identified canal improvements, followed by measures to increase delivery efficiency.

EVALUATION CRITERION B – PROJECT BENEFITS

- *What are the benefits to the applicant’s water supply delivery system?*

There will be an increased ability to correlate water delivery in the canal system with the actual demand. By reducing the flow in the canal, inflows of storm water will not as quickly create the threat of overtopping. The automated controls will allow water to more rapidly be released and thereby decrease the risk of flooding.

- *Extent to which the proposed project improves overall water supply reliability.*

Increasing the ability to regulate the flow of water in the canal system will make it possible to more precisely release water stored in Scofield Reservoir and conserve the available water for later in the irrigation season.

- *The expected scope of positive impact from the proposed project (e.g., local, sub-basin, basin).*

In addition to the benefits related to water management, there will be a positive impact to water quality. The Price River is a tributary of the Colorado River and therefore salinity is an issue of concern in the watershed. Decreasing the flow in the canal by more closely correlating the flow with the demand will decrease the seepage losses in the canal and thereby reduce the leaching of salt to groundwater and the Price River.

- *Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.*

The SCADA system will make real-time data available to all water users in the region and will allow the river commissioner, who administers releases from Scofield Reservoir, to observe patterns of water use and to document trends.

- *Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, and tourism).*

The region surrounding the project area has recently seen an increase in recreational use, including kayaking in the Price River and mountain biking. By making flow rates in the Price River more reliable and consistent, the project has the potential to improve riparian conditions and dramatically increase recreation and tourism.

EVALUATION CRITERION C – PROJECT IMPLEMENTATION

- *Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.*

The following table lists the major tasks and proposed schedule of work.

Task	Duration	
	Start	End
Construct modifications to infrastructure	1-Oct-2017	30-Nov-2017
Coordinate power supply delivery	1-Oct-2017	31-Dec-2017
Install sensors, motors, and appurtenances	1-Nov-2017	19-Jan-2018
Mount and connect SCADA systems	20-Jan-2018	30-Mar-2018
Implement, troubleshoot, and activate software	30-Mar-2018	1-May-2018

- *Describe any permits that will be required, along with the process for obtaining such permits.*

The project will be implemented entirely on private land and not within an existing stream corridor. Therefore, stream alteration or other types of permits are not required.

- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*

Infrastructure modifications and upgrades necessary to install motors and electronic equipment will be designed by a civil engineer. Electrical service and electronic components will be designed by an electrical engineer.

- *Describe any new policies or administrative actions required to implement the project.*

No new policies or administrative actions are required to implement the project.

EVALUATION CRITERION D – NEXUS TO RECLAMATION

- *How is the proposed project connected to a Reclamation project or activity?*

The Scofield Project, which created Scofield Dam and Reservoir, is located near the top of the Price River watershed. The Carbon Canal Company diverts and conveys water from the Price River, including water released from Scofield Reservoir.

- *Will the project help Reclamation meet trust responsibilities to any tribe(s)?*

There are no tribes within the project area or watershed.

- *Does the applicant receive Reclamation project water?*

Scofield water shares are owned by many individuals whose water is delivered through the Carbon Canal system. An annual average of 10,875 acre-feet of water from the Scofield project is delivered in the Carbon Canal.

- *Is the project on Reclamation project lands or involving Reclamation facilities?*

The project is not on Reclamation project lands and does not directly involve Reclamation facilities. The Carbon Canal Company delivers water that is released from Scofield Reservoir.

- *Will the proposed work contribute water to a basin where a Reclamation project is located?*

The project will increase base flows in the Price River watershed, in which Reclamation's Scofield Project is located.

Environmental and Cultural Resources Compliance

- *Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

Vehicles and construction activities at each of the four project locations have the potential to disturb the soil and generate dust. If dust becomes an issue, it can be mitigated through the application of water on the ground surface.

- *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

There are no threatened or endangered species, or designated critical habitat, in the project area.

- *Are there wetlands or other surface waters inside the project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.*

There are no wetlands or other surface waters inside the project boundaries that fall under CWA jurisdiction.

- *When was the water delivery system constructed?*

Exact dates are unknown, but the canal system was constructed in the early 1900s.

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

The proposed project will result in minor modifications to four flow control sites. There is no record of when these individual features were originally constructed. No extensive alterations or modifications were completed previously.

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

A cultural resources inventory was performed in December 2016 and identified the entire canal as a cultural resource, including the flow control sites. Appropriate mitigation measures have been planned and will be coordinated through the Utah State Historical Preservation Office.

- *Are there any known archeological sites in the proposed project area?*

No archeological sites have been identified in the project area.

- *Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?*

The proposed project will have no effect on low income or minority populations.

- *Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?*

The proposed project will have no impacts to tribal lands.

- *Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

There is the potential that seeds of noxious weeds or invasive species be propagated by activities associated with the project. In order to reduce or eliminate this risk, construction procedures will outline methods for thorough cleaning of vehicles and construction equipment prior to evacuating specific sites.

Required Permits or Approvals

Work will not be performed within any waterbody regulated by Section 404 of the Clean Water Act and therefore a stream alteration permit is not required.

A cultural resources inventory was completed in December 2016. The Carbon Canal and related appurtenances have been identified as cultural resources, and mitigation measure have been identified that will allow continual operation of the canal. These measures will be coordinated with the Utah State Historical Preservation Office.

Resolution No. 2017-010

APPLICANT'S NAME: Carbon Canal Company

WHEREAS, the applicant recognizes the need to improve water conveyance efficiency and flow control capabilities in the Carbon Canal, and

WHEREAS, the resources currently available to the applicant are insufficient for the design and implementation of automated flow control sites,

NOW THEREFORE, BE IT RESOLVED that:

1. The applicant's board of directors has reviewed and supports the application submitted;
2. The applicant has procured and is able to provide the amount of funding specified in the funding plan.
3. The applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

DATE May 5, 2017

AUTHORIZED OFFICIAL Kevin Cotner, President



Signature

ATTEST



Signature

Project Budget

FUNDING PLAN

Sources of funding for the proposed project include Carbon Canal Company internal funds generated through annual assessments to shareholders, and a conservation grant from the Utah Department of Agriculture and Food (UDAF). A letter of commitment from UDAF is attached.

Costs that have been incurred before the anticipated project start date are not being included as project costs. No funding is being requested or received from other federal partners. There are no other pending funding requests. Funding sources are summarized in Table 1.

Table 1. Summary of Non-Federal and Federal Funding Sources.

FUNDING SOURCES	AMOUNT
Non Federal Entities	
1. Carbon Canal Company	\$ 5,000
2. Utah Department of Agriculture and Food	\$ 70,000
Other Federal Entities	
1. None	
REQUESTED RECLAMATION FUNDING	\$ 73,580

BUDGET PROPOSAL

The proposed budget is comprised of engineering design, materials, construction, installation, project administration, and project oversight.

Engineering design includes civil engineering design of necessary infrastructure modifications and upgrades, and electrical engineering design of electronic components and electrical service. Engineering design will be performed by consultants procured through current company acquisition procedures.

Project materials include the following: 1) water level and flow sensors; 2) motor, integral controls, gearbox, manual override, and mounting accessories; 3) power supply and SCADA systems for each site; and 4) software and data management for linking sites and providing remote operation capability.

Construction and installation will be performed by a contractor procured through a bidding process. Project administration and oversight will be performed by canal company personnel.

The proposed budget is summarized in Table 2.

Board members do not receive compensation.

Fringe Benefits

Board members and the bookkeeper receive no fringe benefits.

Equipment

There is no plan to purchase or rent equipment to implement this project.

Materials and Supplies

The materials listed in Table 2 include the major components that will be installed at canal sites during implementation of the project. Costs of these items were established using past experience, vendor quotes, and engineering estimates.

Contractual

Up to four contracts will be issued for civil engineering design, electrical engineering design, construction of necessary infrastructure, and installation of electronic components. The estimated costs shown in Table 2 were established using past experience and are subject to the bids that will be received during the process of requesting proposals.

Environmental and Regulatory Compliance

There are no anticipated costs for environmental compliance since an assessment was previously completed, and mitigation procedures have been approved by the appropriate agencies.

Other Expenses

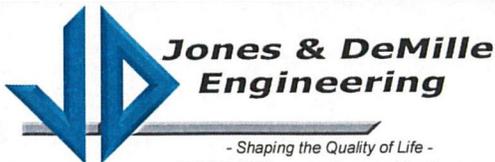
No other expenses or indirect cost are anticipated.

Total Costs

The total estimated cost of the project is \$148,580. The non-federal share is \$75,000. The federal share being requested is \$73,580.

Unique Entity Identifier and System for Award Management

The Carbon Canal Company is registered in the System for Award Management, but is listed as inactive. They are in the process of activating and updating their unique entity identifier and will provide this information as soon as it becomes available.



Carbon Canal Company

**Carbon Canal
Vicinity Map**

Scale: 1" = 4 Miles

Map Name: H:\JD\Proj\1604-064\Design\GIS\Maps\Carbon_Canal_Project_Location.mxd
Project Number: 1604-064

Drawn by: JWW 04-17

Last Edit: 04/24/2017

State of Utah
DEPARTMENT OF AGRICULTURE & FOOD
ZONE 7

1090 N. Des-Bee-Dove Road, P.O. BOX 1114, Castle Dale, UTAH 84513

April 25, 2017

To Whom It May Concern:

In June 2016, the Carbon Canal Company, with support of the Price River Watershed Conservation District, was awarded a conservation grant from the Utah Conservation Commission of the Utah Department of Agriculture and Food.

Through this grant, at least \$70,000 will be available to the Carbon Canal Company between July 1, 2016 and June 30, 2018.

This money must be used for canal safety and management projects on the Carbon Canal, and be fully utilized by June 30, 2018.

There are no other contingencies associated with this funding source.

Please call me at (435) 381-2300 x113 with any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Roger Barton".

Roger Barton
Zone 7 Resource Coordinator
Utah Department of Agriculture and Food